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Christian Brzinsky-Fay
WZB Berlin Social Science Center, Germany

Abstract
Many institutional theories assume that institutions function in conjunction with each other and, therefore, constitute regimes. Moreover, when analysing institutional effects most researchers maintain a purely variable-oriented approach and its ceteris-paribus logic of causal association. This article analyses associations between configurations of labour market and education institutions and relative youth unemployment by examining 30 countries of the Organisation for Economic Co-operation and Development (OECD). The analysis reveals that no single institution constitutes a sufficient or necessary condition for relative youth unemployment. Institutions unfold their effects only in combination with other institutions, that is, they are always conjunctural. Low relative youth unemployment cannot be explained adequately. Employment protection is only associated with high relative youth unemployment if vocational specificity, standardisation and stratification is low.

Keywords
Complex causality, education system, institutions, labour market, qualitative comparative analysis, relative youth unemployment

Introduction

The transition from the education system into the labour market remains a critical period within the life course. On the micro-level, the main reasons for youth unemployment are the lack of signals that show work experience and thus, less information for employers about school leaver's qualification and productivity (Levels et al., 2014; Spence, 1973). Additionally, school-leavers benefit to a lesser extent from employment protection legislation, which favours established employees (De Lange et al., 2014; Lindbeck and Snower, 1989; Organisation for Economic Co-operation and Development (OECD), 1999). These facts make school leavers particularly vulnerable to macro-economic cyclical depressions, which empirically results in higher youth unemployment and higher precariousness (Bell and Blanchflower, 2010;

Corresponding author:
Christian Brzinsky-Fay, WZB Berlin Social Science Center (WZB), Reichpietschufer 50, 10785 Berlin, Germany.
Email: christian.brzinsky-fay@wzb.eu

Blanchflower and Freeman, 2000). Many studies revealed that early employment conditions have a remarkable influence on the later employment career (cf. Arulampalam, 2001; Ellwood, 1982; Hammer, 1997; Kletzer and Fairlie, 2003; Luijkx and Wolbers, 2009; Mroz and Savage, 2006).

A glance at country differences regarding different levels of youth unemployment across the OECD shows that these differences cannot be attributed solely to different economic conditions or social and educational heterogeneities of young people. As national differences are to a certain extent constantly present, institutional arrangements are assumed to play an important role (Raffe, 2008). Educational institutions can be regarded as enduring results from education policies. From a 'social investment state' perspective, education policies are seen as preventive measures of social policy in contrast to passive, mostly transfer-based measures representing the compensatory dimension of social policy (Allmendinger and Leibfried, 2003; Giddens, 2000). Thus, educational institutions as a result of educational policies are tightly connected to institutions of the labour market and both domains need to be regarded. Different institutional configurations in different countries may lead to similar outcomes and must be considered when formulating new policies. Therefore, it is necessary to examine institutions as configurations in order to reflect the interconnectedness between education and the labour market.

Existing labour market theories can be used to derive hypotheses regarding labour market entrants, and some of them refer to institutional effects on school-to-work transitions. These theories are only covering the effects of one single institution despite their claim for covering regime effects. Wide-ranging concepts that aim to explain labour markets as a whole and focus on institutional complementarity – such as the *Varieties of Capitalism* (VoC) approach (Hall and Soskice, 2001) – are lacking methodological tools that allow their appropriate analysis. The analysis of regime effects is a challenging task because regimes are composed of several institutional features that can reinforce and attenuate each other. In the current literature, institutional effects are commonly analysed with regression analysis and its various extensions, either by including dummy variables for pre-defined regime types (e.g. Saar et al., 2008; Wolbers, 2007) or by including variables for single institutions into the model (e.g. Abrassart, 2015; De Lange et al., 2014). Both approaches have considerable weaknesses. While in the first design interactions between institutions cannot be disentangled, the second design suffers from the concept of additive causality (i.e. ceteris-paribus logic) that underlies regression models and impedes the detection of complex causality and equifinality (cf. King et al., 1994). This is also important from a policy perspective, because addressing one institution with a certain policy (e.g. lowering employment protection in order to decrease youth unemployment) might overlook the impact of this change on other institutions and also its effect on the outcome. It is the configuration of the institutional frame that unfolds effects and changing one part of this configuration invokes unintended consequences (see Borgna, 2017).

The aim of this article is to overcome the shortcomings of extant approaches and to identify combined effects of institutional configurations on youth unemployment. The leading hypothesis is that any institutional characteristic will have very different outcomes depending on its combination with other institutions. This is a somewhat broader scope than the usual practice, which only examines additional net effects of single institutions, assuming that these effects are independent of each other. Using the method of qualitative comparative analysis (QCA) (Ragin, 1987, 2000), the detection of institutional configurations that are associated with lower youth unemployment becomes possible.

The following section examines the major institutional and labour market theories that have the potential to provide hypotheses concerning institutional effects on the transition between the education and employment system. This includes a short research review focusing on evidence of institutional effects. This is followed by a short illustration of QCA, an explanation of the country selection and a description of the data (section 'Methods and data'), which also describes the outcome and conditions[1] (institutions of education system and labour market). The results and the policy implications are presented in the sections 'Institutional configurations and RELYUE' and 'Conclusion and outlook'.

Research review

Theoretical background

Variations in empirical outcomes regarding school-to-work transitions and youth unemployment 'cannot all be attributed to differences in countries' economies or to compositional differences in young people's social or educational backgrounds' (Raffe, 2008: 277). Hence, the examination of institutions has been an important issue in comparative research. Institutional and labour market theories provide a basis for the examination of school-to-work transitions and youth unemployment, but in the end – as Raffe (2008) states – 'transition-system research often appears theoretically eclectic and fragmented'.

The major theory concerned with the socioeconomic relevance of institutions and institutional regimes for economic performance, that also considers the employment and the education system is the *Varieties of Capitalism* (VoC) approach (Hall and Soskice, 2001). In this literature, capitalist economies are distinguished according to their mechanisms of economic coordination. Crucial institutions are regarded as complementary and, therefore, as relatively stable across time. The VoC approach distinguishes between coordinated market economies (CME) and liberal market economies (LME). These two types of economies provide different incentives to economic actors, which in turn leads to different comparative advantages regarding the production of certain commodities and the provision of social benefits. Consequently, a convergence of political and economic institutions across different countries, which features prominently in classical industrialisation and modernisation theory (Collier and Messick, 1975; Eyestone, 1977) is denied. The VoC approach emphasises the 'varieties' of capitalist economies in spite of lasting modernisation.

In the transition regime approach, institutional regimes comprise the relevant spheres of industrial relations, the vocational education and training system, corporate governance, inter-firm relations and relations with employees (cf. Busemeyer and Trampusch, 2012). A school-to-work transition system can be defined as 'relatively enduring features of a country's institutional and structural arrangements which shape transition processes and outcomes' (Smyth et al., 2001). In order to examine the transition between school and employment, institutional arrangements of the labour market and the education system are usually examined. One would expect that many possible combined effects are within the scope of this approach. However, an in-depth analysis can barely be found. The VoC approach, for example, summarises all the different possible combinations of institutional specificities in only two types of political economies, namely, CMEs and LMEs. Even the transition regime approach only analyses institutions as single characteristics, which do not show conjunctural – that is, mutually conditional – effects.

In economics, a different set of theories concerned with institutions and their effects has emerged. The basic neoclassical market model assumes that a well-functioning wage mechanism avoids involuntary unemployment. Labour market theories aim at explaining persistent unemployment either by particular shortcomings of the neoclassical model or by institutional rigidities. In contrast to the standard model, which does not offer explanations for the disadvantaged position of young people, some labour market theories do so. Four such theories are discussed here.

Signalling theory provides an explanation for the matching between labour market supply and demand by emphasising the importance of certificates and credentials (Spence, 1973; Stigler, 1962; Stiglitz, 1975). This refers to the standardisation, the vocational specificity and the stratification of education systems (Müller and Shavit, 1998). Standardisation is defined as the degree to which the organisation and curricula of schools are similar across the country; vocational specificity refers to the degree to which credentials have specific vocational relevance; and stratification means the degree of vertical differentiation within a country's school system (Kerckhoff, 2004). The imperfect information of employers regarding qualifications and the expected productivity of employees constitutes a disadvantage for young people. As labour market entrants have no work experience and no references from earlier employers, they face a higher risk of being misjudged by employers regarding their qualifications and future productivity. In general, employers tend to avoid high transaction costs that result from erroneous hiring decisions. According to signalling theory, highly standardised education systems or high vocational

specificity or high stratification provide employers with comparable information on the employees' qualifications and, therefore, are expected to lower youth unemployment.

Human capital theory discusses educational effects on the labour market (Becker, 1962, 1975; Bowman, 1966; Mincer, 1974). Employees are not homogeneous but differ according to their human capital, which is their investment in education and training, as well as their work experience. While originally only concerned with wages, later extensions of the human capital theory also emphasised individual chances for favourable labour market entry, which increase with higher levels of education (cf. Müller and Shavit, 1998). Additionally, human capital theory distinguishes between occupation-specific and firm-specific qualifications, the former of which is associated with better chances for labour market entry, because such skills are transferable between different firms. A high vocational specificity should therefore increase school leavers' chances at labour market entry.

Labour queue theory emphasises the role of general education, which determines the individual position within the overall distribution of general skills (Thurow, 1976). Vocational skills are not explicitly mentioned regarding the explanation of youth labour market entry chances, because skills demanded at a certain workplace are specific to that workplace. Thus, employers hire and dismiss workers according to their position within the labour queue. According to this theory, vocational specificity can be expected not to play a strong role regarding a successful transition into employment. When taking into account institutional context, there is some empirical evidence that human capital theory has more explanatory power in countries with coordinated economies, whereas the labour queue model provides a good explanation for liberal countries (cf. Dieckhoff, 2008).

Insider–outsider theory considers job holders as insiders that have a more powerful position than outsiders – such as unemployed or labour market entrants (Lindbeck and Snower, 1989). Consequently, insiders have more resources in order to negotiate their wages and working conditions. This theory provides explanations for effects of institutional characteristics such as union density or employment protection, which are expected to decrease labour market entrants' chances.

All effects derived by these theories are quite well researched additively, that is, as net effects under control of other institutional and individual factors. They all overlap regarding the positive effect of vocational specificity on labour market entry (see Di Stasio, 2017). However, the lack of research regarding the possibility of combined effects between particular institutional characteristics constitutes a fundamental research gap. This leads to limited explanatory power when it comes to countries that deviate from the rules. Even if this is recognised as a problem (Esping-Andersen, 2000: 81), there is insufficient research on such effects, from which the works of Breen (2005) and Bol et al. (2014) are exceptions, who analyse the interplay of two institutional factors regarding their outcome on relative youth unemployment (RELYUE) and educational inequality. However, the conjunctural effects of other institutions are lacking, which is a result of the absence of an appropriate method that is capable of analysing conjunctural effects.

Hypotheses

In the social science literature, the determinants that are used in order to describe the institutional and policy context relevant for youth unemployment of a country are mostly based on the country's degree of vocational specificity. The dichotomy between occupational and non-occupational countries (cf. Marsden, 1990; Maurice et al., 1986) has been shown to provide some explanatory power regarding Northern European countries, but it failed to explain mobility, status attainment and unemployment of labour market entrants in Southern Europe (cf. Gangl, 2001) and the structure of labour market entry sequences of school leavers in general (cf. Brzinsky-Fay, 2007). Hence, in addition to vocational specificity, one needs to employ other institutional variables, such as standardisation of certificates and stratification of the educational system (cf. Allmendinger, 1989; Kerckhoff, 2004). Owing to the unsatisfactory explanatory power of single institutional features, it can be assumed that we will predominantly find combined effects.

Hypothesis 1. Institutional effects on RELYUE are conjunctural in nature; there will be no 'net' effect of a single institution without connection to other institutions.

An institutional linkage between education and the labour market as provided by vocational schools or apprenticeships has displayed a positive effect on labour market outcomes of young labour market entrants (e.g. Allmendinger, 1989; Gangl et al., 2003; Julkunen, 2010; Kerckhoff, 1995; Kerckhoff, 2000). Therefore, the *vocational specificity* of an education system is an important institutional feature that refers to the degree in which a vocational specialisation already occurs within the education system. There are diverging theoretical propositions regarding the effect on youth unemployment: with the human capital theory, one could argue that occupation-specific skills (high vocational specificity) decrease youth unemployment, the labour queue theory assumes that there is no effect of vocational specificity on youth unemployment. Therefore, it can be assumed that vocational specificity is important only in particular combinations with other institutions.

Hypothesis 2. The effect of vocational specificity depends on the connection with other institutions.

The *stratification* of an education system refers to selection processes within the educational system (Allmendinger, 1989; Müller and Shavit, 1998). Sometimes, this concept is also labelled 'selectivity' (e.g. Isengard, 2003). Highly stratified systems are characterised by separate tracks at a given educational level, into which pupils are sorted during their school career. Most often, this happens at the secondary school level (Kerckhoff, 2004).

The expected effect of stratification on RELYUE is the following: educational levels in a clearly stratified system correspond to the occupational structure, the nexus between education and employment is quite strong and, therefore, according to signalling theory, the frequency of job shifts and unemployment might be reduced (cf. Maurice et al., 1986). At the same time, occupational mobility at later points in the career is expected to be lower in highly stratified education systems and successful adjustments are less likely, especially when employment protection is high as well (Gangl, 2003). This may increase RELYUE. One could also think of a reinforcing effect between low stratification and high employment protection: in this case, the education–occupation link is weak (low stratification), while occupational adjustment is difficult (high employment protection). Hence, conjunctural effects, to which stratification contributes in different directions, can be expected here.

Hypothesis 3. Since stratification has no clear direction regarding its effect on youth unemployment, it can be assumed that low stratification as well as high stratification unfold their effects depending on the conjunction with other institutional conditions.

The concept of *standardisation* describes 'the degree to which the quality of education meets the same standards nationwide' (Allmendinger, 1989: 233). This concept is not very clear-cut, but widely used and often includes teacher training, school budgets, curricula definition and nationwide examination standards. The relevance of standardisation for labour market outcomes refers to the clear information that certificates provide for employers. They do not need to screen or train job entrants, and thus, the number of job changes is about to decrease, that is, the school-to-work transition becomes smoother (Allmendinger, 1989: 239). One can argue that the effect of standardisation is very much dependent on the form of vocational orientation and/or stratification. For example, in systems with dual apprenticeships, high standardisation goes along with high vocational specificity.

One of the main factors that affects the integration process of young people is the degree of *employment protection* (e.g. Breen, 2005; Julkunen, 2010; Van Der Velden and Wolbers, 2003). Employment protection comprises regulations regarding hiring and dismissal of employees, ensuring job security on one hand, while narrowing flexibility of employers on the other. Regarding the effects of employment protection on overall economic performance researchers have found contradictory results (OECD,

2007b). As suggested by insider–outsider theory (Lindbeck and Snower, 1989), established employees have negotiated better employment conditions (and higher employment protection) in collective labour agreements – such as seniority decreasing the risk of being fired – while increasing new workers' probability of losing their job (or not even gaining one). This 'last in, first out' principle remarks an extreme example and has a strong negative effect on school-to-work transitions (cf. Van Der Velden and Wolbers, 2003). According to Breen (2005), the negative effect of high employment protection can be offset if the education system provides clear signals, which Breen assumes to be the case when vocational specificity is high. One could expand on this assumption by including standardisation as a feature providing clear signals. From this perspective, we can derive two clear-cut conjunctural hypotheses.

Hypothesis 4a. The association between high employment protection and high RELYUE is offset by high vocational specificity. High employment protection is only associated with high RELYUE when vocational specificity is low.

Hypothesis 4b. The association between high employment protection and high RELYUE is offset by high standardisation. High employment protection will only be associated with high RELYUE if standardisation is low.

Methods and data

Comparative research, regression, and QCA

When comparing countries, researchers run into the classical 'many variables, few cases' dilemma (Lijphart, 1971, 1975): many variables are needed to describe a country's complexity, while the number of (comparable) countries remains small. Since statistical methods require at least 50 cases even for simple inferences, they are only rarely applicable (cf. Maas and Hox, 2005). Alternatively, sets of few countries can be analysed qualitatively using case studies. Here, in principle, the number of countries analysed is limited by practical problems, because comprehensive in-depth case studies require a lot of knowledge about the countries, and even with large research groups, this can be challenging. This situation led to a lack of studies with an intermediate number of cases, that is, between 3 and 30 countries (Ragin et al., 1996).

A helpful approach to make these problems transparent in an explorative way is QCA. Unlike most qualitative methods, QCA is highly formalised. Its mathematical basis is Boolean algebra or logical set theory rather than probability theory and linear algebra (Ragin, 1987, 2000). Regression models are based on the conception of additive causation, where each additional independent variable increases the explained variation of the dependent variable. However, in complex societies, causation is assumed to be complex or multiple as well, hence, while different combinations of different causal factors can have the same effect (King et al., 1994), regression models are not able to capture these mechanisms. The application of QCA enables researchers to analyse relationships between an outcome and all possible combinations of multiple predictors (for a more detailed description of the method, see Borgna, 2017). QCA is applied here as an exploratory tool in order to detect institutional configurations that condition aggregate outcomes regarding school-to-work transitions. It is not primarily seen and applied as a theory-confirming or hypothesis-testing method,[2] but rather as an explorative tool that should enable further research. However, one disadvantage remains, which is inherent to all cross-national comparisons of institutional features, namely, the fact that institutions or institutional configurations are not randomly distributed across countries.

Operationalisation and calibration

Selecting cases in cross-national comparison entails some serious problems compared to selecting a random sample of individuals from a certain population (Anckar, 2007). Unlike a random sample, country selection is an intentional process that involves – even unintended – selection bias. Especially when the 'most similar system design' (Przeworski and Teune, 1970) is applied – that is, searching for differences between similar units – this obstacle becomes prevalent (Ebbinghaus, 2005). The 30 OECD countries selected

for this study differ clearly with respect to their education and employment systems. The selection criteria for OECD member countries guarantee a sufficient degree of comparability, because they all represent capitalist, industrialised and economically developed countries.

The outcome variable of interest is the RELYUE rate, which is calculated by dividing the unemployment rate for young people under the age of 25 years by the adult unemployment rate of those who are 25 years and older.[3] This provides an unemployment measure controlling to a certain degree for cyclical economic conditions (cf. Breen and Buchmann, 2002), which is commonly used in other analyses (e.g. Breen, 2005). Apart from that, as a ratio it reflects the disadvantage of youth on the labour market compared to other age groups. This measure also has the advantage of being available for all of the countries under observation.

The conditions reflecting the institutional properties of each country are vocational specificity, stratification, standardisation and employment protection. *Vocational specificity* is measured by the share of young people who are enrolled in vocational programmes (OECD, 2005). This was originally adopted by Estevez-Abe et al. (2001) and remains a disputable operationalisation. In this respect, it is argued that a differentiation between school-based and workplace-based training should be made (e.g. Breen, 2005), because a dual system of apprenticeship strengthens the positive effect of vocational specificity on the probability of smooth transitions between school and work (Russell and O'Connell, 2001; Van Der Velden and Wolbers, 2003). Since data for all countries and time points are only available for the general OECD definition, this is applied here. For the measurement of *stratification*, there is a group of indicators such as the age at which children are selected into separate tracks and the number of different school types available for 15-year-olds (OECD, 2005). The OECD combines these into an additive stratification indicator, which is used in this article. For the feature of *standardisation*, the OECD provides indicators that comprise several aspects of school governance and accountability (OECD, 2004a).[4] Using indicators of school governance – such as school autonomy, government influence, or level of decision-making – one assumes that a lower degree of government influence and/or a higher degree of school autonomy is associated with lower standardisation. The level of decision-making between central and school level refers to decisions about the school staff, the budget and the curriculum. If these decisions are made on a central level, standardisation is high. The indicators of accountability – such as existence of national exams, or national assessments and inspections (cf. OECD, 2007a) – also aim to reflect standardisation. The rationale behind these indicators is the assumption that nationwide assessments of schools' educational outputs and regular inspection provide common incentives for schools to behave in a similar manner. In this article, an own composite additive indicator of standardisation is used, which includes the existence of national examinations, the level of school autonomy and the accountability index. For the measurement of *employment protection*, the OECD indicator of strictness of employment protection for regular contracts (OECD, 2004b) is used. Although this indicator has some well-known weaknesses (cf. Eichhorst et al., 2008; Ochel, 2005), it is used here because of the lack of alternatives.

The observational time covers two decades – from 1990 to 1999 and from 2000 to 2009 – for which the period averages by country were calculated. Values for stratification and standardisation are not available for each single year, so they are held constant for the two periods. The distinction of the two periods is made in order to, at least somehow, control for substantive change of the institutions across time, for example, labour market liberalisation reforms.[5] The decision for the end year of 2009 is made in order to exclude the strong effects of the crisis, which differ remarkably between countries and therefore may distort the results. This yields a dataset containing 60 cases (= 30 OECD countries with two periods each) and 5 variables (one outcome and four conditions). As there is no data for Luxembourg and Iceland in the first period (1990–1999), the final case number is 58.

When applying QCA, quantitative variables need to be transformed into fuzzy scales, a process that is called calibration (cf. Schneider and Wagemann, 2012: 35f.). The outcome and condition variables are

Table 1. Most parsimonious solution for high relative youth unemployment (RELYUE).

Set	Raw coverage	Unique coverage	Row consistency	Country-periods
e*V*T*S	0.135	0.063	0.956	Belgium
E*v*t	0.274	0.107	0.935	Greece, Korea 2
E*v*s	0.223	0.035	0.959	Hungary 2, Italy 2, Korea 2
E*t*s	0.299	0.116	0.905	Finland, Korea, Poland, Sweden
Total coverage = 0.525				
Solution consistency = 0.908				

Annotation: the numbers in the last column refer to the period: 1 = 1990–1999 and 2 = 2000–2009.

calibrated here by applying the so-called direct method (Ragin, 2008a, 2008b).[6]

Institutional configurations and RELYUE

This analysis aims at examining the effects of an array of institutional conditions on RELYUE for 30 OECD countries. The conditions are employment protection (E), vocational specificity (V), stratification (T) and standardisation (S).[7] The fuzzy-set QCA reduction of the combinations of the four institutions is applied to high RELYUE and to low RELYUE, because different condition sets may be connected with these two outcomes (cf. Schneider and Wagemann, 2010: 408).

The first step is to check whether there are configurations of the conditions that do not exist in reality (limited diversity), or in other words, whether we have too many logical remainders.[8] Only 2 out of 16 configurations cannot be found in the data, namely, eVts (i.e. low employment protection, high vocational specificity, low stratification, low standardisation) and evTs (i.e. low employment protection, low vocational specificity, high stratification, low standardisation). This amount of limited diversity is acceptable and should not influence the results. Three countries changed their configuration between the two periods, namely, Hungary, Italy and Korea. In all three countries, the change is due to a decrease in apprenticeship training and participation in vocational tracks (cf. European Centre for the Development of Vocational Training (CEDEFOP), 2011).

The first QCA is conducted using high RELYUE as the outcome. To arrive at the most parsimonious solution, so-called *primitive expressions* (truth table rows that are sufficient for the outcome) are minimised by applying the Quine–McCluskey algorithm[9] and taking care of logical redundant *prime implicants* (solution terms resulting from the minimisation). The results are shown in Table 1. The solution consistency indicates to what degree the empirical data are in line with the subset relation. Here, the solution consistency is high (0.908), indicating that those cases that entered the minimisation are very well explained. The solution coverage shows how many of the empirical cases are explained by the solution sets. This value is not too high (0.525), because only 14 country-periods are covered by the solution, which points to the fact that not only institutional factors are associated with relative unemployment but also further institutional factors might play a role.

Looking at the prime implicants reveals that no single condition is necessary or sufficient, because all conditions affect the outcome only in combination with other variables. This supports hypothesis 1 for high RELYUE. The condition that should be strongly associated with high RELYUE is high employment protection (E), according to previous research. Table 1 reveals that this association is only valid if employment protection is combined either with low vocational specificity and low stratification (Evt) or with low vocational specificity and low standardisation (Evs) or low stratification and low standardisation (Ets). This corroborates hypothesis 4a and 4b, namely, that high employment protection is only associated with high RELYUE when vocational specificity or standardisation is low. As stated in hypothesis 3, the stratification of an educational system appears with different values in the solution:

Table 2. Most parsimonious solution for low relative youth unemployment (RELYUE).

Set	Raw coverage	Unique coverage	Row consistency	Country-periods
e*v*t	0.298	0.118	0.661	Iceland 2, New Zealand, USA, Canada, Japan
v*t*S	0.210	0.031	0.482	Greece, Iceland 2, New Zealand, USA
Total coverage = 0.328				
Solution consistency = 0.562				

Annotation: the numbers in the last column refer to the period: 1 = 1990–1999 and 2 = 2000–2009.

in the first prime implicant (eVTS), high stratification in combination with the three other conditions is associated with high RELYUE; whereas in the second (Evt) and third (Ets), low stratification appears in combination with other conditions.

The assessment of hypothesis 2 requires the reconnection to the cases, which are the country-periods (last column in Table 1). The first configuration (eVTS) contains only Belgium (both periods); the second configuration (Evt) contains Greece (both periods) and Korea (2nd period), the third configuration (Evs) contains the second periods of Italy, Korea and Hungary; and the fourth configuration contains Korea, Sweden, Poland and Finland (both periods). Additionally, high vocational specificity should be associated with low RELYUE.

The raw coverage is taken to determine the sufficiency or necessity of a condition (or configuration). It reflects how much of all the cases are explained by a sufficient condition (Schneider and Wagemann, 2012: 133f.). For all four acceptable solutions, the unique coverages are quite small, indicating that the solutions are overlapping, which means that single solutions describe more than one single case. The analysis of necessary conditions reveals that no condition is necessary for the outcomes.

One important observation is that only few countries can be explained by all the solution paths (low total coverage). On the other hand, these countries are explained very well (high consistency). Among those countries not explained are important countries such as Germany or France, which often served as ideal types in school-to-work transition research. This might be due to other institutions that are not regarded here or because of the indicator operationalisation for vocational specificity, because in the OECD definition it measures enrolment in vocational programmes and not formalised apprenticeships.

The second QCA looks at the configurations that are sufficient or necessary for low RELYUE (Table 2). Here, the values for consistency (0.562) and coverage (0.328) are not convincing at all. Only 10 country-periods are covered by a non-consistent solution. Therefore, there is no configuration of the four conditions that explain the occurrence of low RELYUE.

Conclusion and outlook

The exploration of complex causalities is a very important strategy for policy development, because it reveals the configurational character of institutional settings as proposed by theoretical concepts. Defining policies that only target one single institutional characteristic (such as employment protection), neglect interconnectedness of institutions. We found that high RELYUE has no necessary institutional condition but sufficient institutional conditions. There are four configurations representing eight countries that are sufficient for high RELYUE. Regarding the hypotheses, three of them can be confirmed by the analysis, while one has to be rejected. There is no institution that affects RELYUE exclusively; each of them shows its relation to the outcome in conjunction with other institutions (hypothesis 1). This supports the fact that policies should always target institutional configurations. This analysis fills the gap between the regime logic, which is proposed by theoretical typologies, and the additive logic, on which most of the existing methods are based.

The second conclusion is that theoretical propositions regarding institutional effects on RELYUE should differentiate between low and high outcomes. The analysis impressively corroborates the finding

of Breen (2005), but only does so for high RELYUE (hypotheses 4a and 4b). The results regarding employment protection apparently contradict the unidimensional proposition of the insider–outsider theory, which claims that high employment protection in itself increases RELYUE. However, high employment protection is part of three conjunctural effects together with low standardisation, low vocational specificity or low stratification. This makes high employment protection an 'almost-necessary', but not sufficient condition. Policies targeted at reducing unemployment protection must take these into consideration. When analysing low RELYUE separately, no consistent solution can be found. With the four institutional conditions and the OECD countries in the two periods used here, the incidence of low RELYUE cannot be explained, which is not implied in earlier studies. Additional research should include further institutional conditions that might be associated with low RELYUE.

The third conclusion is that the association between vocational specificity and high RELYUE appears not to be as clear-cut as the two theoretical perspectives implied. According to the human capital approach it should lead to lower RELYUE, whereas from a labour queue perspective it should have no effect. Both perspectives cannot be confirmed here, because it is only the absence of vocational specificity – in connection with high employment protection – that is connected with high RELYUE. The policy implication here is that increasing vocational training is not sufficient for tackling youth unemployment, but that one has to additionally target the other institutions within the configuration.

Fourth, stratification seems to play a role in connection with employment protection, but again, only for high RELYUE. It enters solutions with a high and a low value, which explains the fact that analyses using conventional techniques based on the correlational logic reveal contradicting results regarding the effect of stratification (hypothesis 3).

For further analyses in this field, additional institutional characteristics should be included – first of which, those who might explain the incidence of low RELYUE. Examples are aggregated competency levels and the degree of globalisation, both of which are seen as influential regarding young people's chances to enter the labour market. Due to its unclear definition and the theoretical and empirical consistency with vocational specificity and stratification, the standardisation of education systems seems to be substitutable.

Another important aspect for future analyses is the fact that some important countries are not covered by the QCA solution, such as Germany. The reason for this could be that further institutional conditions than those that are used here might play a role and should be explored or that the classical definition of some conditions – for example, vocational specificity or stratification – might be replaced by more sophisticated ones.

Although the findings of this article are mainly explorative in nature, they enrich the insight into interdependencies between institutional features of the educational system and the labour market, and not only provide a comprehensive basis for further research but also prevent policy makers from targeting only one single institution while ignoring their configurational embedding. If education is understood as social policy investment, it must take this into account.

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Notes

1. In qualitative comparative analysis (QCA) terminology, independent variables are 'conditions' and dependent variables are 'outcomes'.
2. Even Rihoux and Ragin (2009), while assessing types of usage of QCA, only refer to 'checking

hypotheses or existing theories' instead of 'testing' or 'confirming/rejecting'.

3. It has to be mentioned that in countries with an apprenticeship system, people younger than 25 years have a slightly lower probability to be at risk of becoming unemployed.
4. Based on Organisation for Economic Co-operation and Development (OECD) and own surveys, Horn (2009) also distinguishes two dimensions of standardisation, namely, *centralisation* – that is, relation between central government and school – and *accountability* – that is, curriculum and examination controlling.
5. It was also checked whether the results differ if only one (1990–2009) or if four periods (1990–1994, 1995–1999, 2000–2004 and 2005–2009) were chosen. The differences are large in the former case, but quite small for the latter. It was decided to refuse the one-period solution, because the bias introduced by a 20-year-average is obviously too high. The four-period solution showed more inflated (identical) cases than the two-period solution, which has only low analytic value.
6. An overview of the fuzzy values of the outcome variable and for the conditions is given in the online appendix (Appendix 1). The choice of the median instead of the average for the periods was also checked, but the results did not differ remarkably.
7. The QCA terminology uses upper-case letters for membership (high values above the crossover point) and lower-case letters for non-membership (low values below the crossover point).
8. In online appendix, the configurations and the equivalent country-periods are displayed (Appendix 2).
9. For the calculations the statistical software package Stata is used, for which Longest and Vaisey (2008) have created the user-written ado 'fuzzy'. The significance level for the test of the configuration's y-consistency against the 0.800 level is set to 0.05, which is quite strict. Therefore, only 7 out of 16 primitive expressions enter the minimisation process, because they are sufficient for the outcome and pass the significance testing.

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